

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND

SHEENA DORMAN, et al.

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Plaintiffs

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vs.

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CIVIL ACTION NO. MJG-15-1102

ANNE ARUNDEL MEDICAL CENTER,
et al.

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Defendants

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MEMORANDUM AND ORDER RE: DAUBERT MOTIONS

The Court has before it the following motions and the materials submitted relating thereto:

1. Plaintiffs' Motion To Exclude The Defendants' Expert Causation Opinions [ECF No. 62];
2. Defendants' Motion To Exclude Expert Testimony On Lost Future Income And Request For Hearing [ECF No. 63];
3. Defendants' Motion To Preclude Opinion Testimony of Robert Allen, Ph.D. And Request For Hearing [ECF No. 65]; and
4. Defendants' Supplemental Memorandum Supplying Testimony And Supporting Exclusion Of Causation Opinions Of Fred Duboe, M.D. and Scott Kozin, M.D. [ECF No. 67].

The Court has held two hearings, including testimony and oral argument, on all pending motions.

I. BACKGROUND¹

This is a personal injury case involving a birth emergency and the subsequent injuries sustained by an infant during labor

¹ The "facts" as stated herein are based on the Complaint and are not necessarily agreed upon by Defendants.

and delivery. Plaintiffs Sheena Dorman ("Dorman"), B.M.,² and Dillon Ming (together, "Plaintiffs") bring a medical malpractice action against Defendants Annapolis OB-GYN Associates and Dr. Richard Welch ("Dr. Welch").³

On June 29, 2013, around 4:55 PM, Ms. Dorman, then 37 weeks pregnant, was admitted to Dr. Welch's clinic in active labor. She was observed by Dr. Welch and Nurse Kristen Becker ("RN Becker"). The medical team noted dilations of her cervix until approximately 1:05 AM on the following day. At that point, Ms. Dorman began to push with the contractions.

Before the baby was delivered, Dr. Welch noticed a "turtle sign," requiring him to perform a physical maneuver to prevent damage to the fetus.⁴ A "turtle sign" is a sign of an obstetrical emergency called shoulder dystocia. In the most basic terms, it signifies that the fetus's shoulder has become lodged on either the mother's public bone or her spinal sacrum during delivery, and the head retreats back into the mother slightly - like a turtle retreating into its shell. This is an emergency because the fetus continues move out of the birth canal, yet the shoulder remains lodged, resulting in stretching

² The injured minor, by his parents, Sheena Dorman and Dillon Ming, as next friends.

³ Claims against Anne Arundel Medical Center have been terminated from this case. See ECF No. 58.

⁴ The Court understands the medical statements in this paragraph to be agreed upon by all parties.

to the nerves that come from the spinal cord and travel down the arm (i.e., the brachial plexus nerves). The stretching, if severe, can cause certain injuries, including weakness or paralysis of the side of the body corresponding to the injury (i.e., "Erb's Palsy"). The injuries may lead to temporary or permanent disabilities.

Dr. Welch wrote in his delivery notes at the time of the birth that he performed the physical maneuver by applying "downward traction" with minimal descent (called a "McRobert's maneuver") to dislodge the fetus. The fetus was successfully delivered after the maneuver, and Dr. Welch recorded that the shoulder dystocia had lasted about 30 seconds.

B.M. was delivered at 1:18 AM with respiratory problems, hypotonia (low muscle tone), and cyanosis (bluish-colored skin). He was admitted to the neonatal intensive care unit ("NICU") and discharged on July 4, 2013 with diagnoses of Erb's Palsy and respiratory distress syndrome. He continues to suffer from continuing health problems related to the birth injury, including limited mobility in his left arm and hand.

II. DAUBERT STANDARD

"[T]he trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." United States v. Crisp, 324 F.3d 261, 265 (4th Cir.

2003), citing Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993). There are five factors in this analysis:

- (1) whether the particular scientific theory "can be (and has been) tested";
- (2) whether the theory "has been subjected to peer review and publication";
- (3) the "known or potential rate of error";
- (4) the "existence and maintenance of standards controlling the technique's operation"; and
- (5) whether the technique has achieved "general acceptance" in the relevant scientific or expert community.

Id. This is not a definitive or exhaustive list, but only "illustrates the types of factors that will 'bear on the inquiry.'" Id. The analysis must be flexible. Id.

III. OVERVIEW OF PARTIES' CONTENTIONS

The Court understands the main issue at trial to be the cause of B.M.'s birth injury.

Plaintiffs contend that the injuries in this case could only be caused by Dr. Welch's violation of the standard of care, specifically, by performing a "lateral" maneuver that involved bending of the baby's neck.⁵ Plaintiffs do not contend that

⁵ "Lateral" traction involves bending of the baby's neck, which, if found, could be a standard of care violation in this case. By contrast, "axial" or "downward" traction involves force applied to the baby's head when the head and neck are in the same plane, i.e., without bending the neck. Parties appear to agree that axial traction, if properly conducted, would not be a standard of care violation in this case.

maternal forces of labor⁶ could never contribute to this type of injury, only that they could not have caused the injuries in this case. Hearing Tr. 4, ECF No. 86 (Apr. 25, 2018).

Defendants contend that application of lateral force or bending of B.M.'s neck cannot be found based upon the evidence in this specific case. And because the evidence does not support a finding of lateral force or bending, they argue, maternal forces are more likely than not the cause of B.M.'s injury in this case.⁷ Hearing Tr. 5-6, ECF No. 86 (Apr. 25, 2018).

IV. CAUSATION EXPERTS

Plaintiffs wish to exclude Defendants' causation expert opinions, specifically, the opinions of Drs. Michele J. Grimm, Kenneth Silver, and Stephanie Green. See ECF No. 62.

Defendants wish to exclude Plaintiffs' causation expert opinions, specifically, the opinions of Drs. Robert Allen, Fred J. Duboe, and Scott H. Kozin. See ECF Nos. 65 and 67.

The Court has heard testimony from Dr. Grimm and Dr. Allen. Based upon the record and the testimony presented, the Court

⁶ Maternal forces of labor including involuntary uterine contractions and quasi-voluntary maternal pushing. Hearing Tr. 99, ECF No. 86 (Apr. 25, 2018).

⁷ If the evidence showed that Dr. Welch did perform lateral traction, Defendants' experts would not be able to support this contention. Hearing Tr. 7, ECF No. 86 (Apr. 25, 2018).

will not exclude the opinions of any of the parties' causation experts.

A. MICHELE J. GRIMM, PH.D

Dr. Grimm is a biomedical engineer⁸ who has published many peer-reviewed articles in the field of neonatal brachial plexus palsy. Her research is based upon data collected from computer simulations of labor and delivery. She was part of a Task Force on Neonatal Brachial Plexus Palsy that culminated in a 2014 report published by the American College of Obstetricians and Gynecologists that summarized the state of knowledge regarding causes and outcomes of neonatal brachial plexus palsy.⁹ The report, supported by many organizations in the obstetrics community,¹⁰ rejected the theory that a permanent neonatal brachial plexus injury could occur only as a result of physician-applied forces (i.e., exogenous forces).

⁸ Dr. Grimm earned a Bachelor of Science in engineering mechanics and biomedical engineering at Johns Hopkins and a M.A. and Ph.D. in bioengineering at the University of Pennsylvania.

⁹ Pls.' Opp. Ex. 6 at 19-22, ECF No. 71-7, entitled "Neonatal Brachial Plexus Palsy," American College of Obstetricians and Gynecologists (2014).

¹⁰ The American Academy of Pediatrics, American Academy of Physical Medicine and Rehabilitation, American College of Nurse Midwives, American Gynecological and Obstetrical Society, American Society for Reproductive Medicine, Child Neurology Society, Japan Society of Obstetrics and Gynecology, the Royal Australian and New Zealand College of Obstetricians and Gynecologists, Society for Maternal-Fetal Medicine, and the Society of Obstetricians and Gynecologists of Canada. Hearing Tr. 88, ECF No. 86 (Apr. 25, 2018).

Dr. Grimm will not testify as to the standard of care.¹¹ Rather, her opinions in this case proceed on the assumption that Dr. Welch did not apply lateral traction or bending of the neck (i.e., that he did not violate the standard of care).¹² In other words, she will opine that absent proof there was lateral traction or bending, the only remaining cause that could have caused the stretching injury are the maternal forces of labor. Hearing Tr. 10, ECF No. 86 (Apr. 25, 2018).

She distinguishes between posterior and anterior shoulder injuries. She explains that in a posterior shoulder injury, the head has not yet been delivered so the doctor's hands are not yet on the baby's head and all of the injury should be due to maternal forces of labor. Hearing Tr. 99, ECF No. 86 (Apr. 25, 2018). In her opinion, an anterior shoulder injury could be caused by maternal forces of labor in conjunction with normal physician-applied traction, but that maternal forces would contribute to more of the stretch and could be sufficient on their own to cause a permanent injury. Hearing Tr. 99, ECF No.

¹¹ Plaintiffs argue that because Dr. Grimm bases her opinion on the assumption of a lack of lateral traction in this case, she is somehow opining on the standard of care. However, that is not the case. Dr. Grimm is not opining on whether Dr. Welch did or did not perform lateral traction (i.e., violate the standard of care); rather, she is opining as to the cause of the injury in the event that he did not perform lateral traction.

¹² In fact, she states that if she saw evidence in this case that Dr. Welch applied lateral traction or bent B.M.'s neck, she would not be able to support Defendants' contentions. Hearing Tr. 143, ECF No. 86 (Apr. 25, 2018).

132 (Apr. 25, 2018). There is no record of which shoulder was lodged in this case (i.e., the posterior or anterior shoulder).

Using commercially available software, MADYMO (standing for "mathematic dynamic model"), Dr. Grimm developed a computer model using a "50th percentile" maternal pelvis and a "90th percentile" fetus to model what was happening to the brachial plexus during delivery. Hearing Tr. 104-05, ECF No. 86 (Apr. 25, 2018). The model was based upon specific standards, including tissue properties obtained from validated animal studies (e.g., stiffness of infant goat necks and the nerve properties of the tibial nerve in rabbits). The computer model was then used to simulate deliveries and delivery outcomes. Dr. Grimm would change parameters in the model as part of her studies, including adding physician-applied forces and maternal forces to estimate the resulting stretch to the brachial plexus. Hearing Tr. 106, ECF No. 86 (Apr. 25, 2018).

Through the results of the model, Dr. Grimm concluded that bending of the neck causes significant stretch to the brachial plexus and can be an accepted cause of the injury, but that absent such bending, the greatest amount of stretch occurs due to maternal forces. Hearing Tr. 120, ECF No. 86 (Apr. 25, 2018). In other words, she concludes that maternal forces alone are able to cause a permanent brachial plexus injury, even with normal amounts of physician-applied traction. Hearing Tr. 121,

ECF No. 86 (Apr. 25, 2018). The data collected from her computer model has been the basis of many peer-reviewed articles.

She also adapted her opinion to the facts of this particular case. Three main facts are consistent with her opinion that maternal forces could have been the sole cause of the injury: (1) Dr. Welch's notes state that he performed axial traction (and not lateral bending), (2) B.M.'s muscle tone was low upon birth so his brachial plexus was more prone to stretching injuries, and (3) there was 15 minutes of pushing in this delivery so maternal forces were applied over that time. Hearing Tr. 125, 129-130, 132, ECF No. 86 (Apr. 25, 2018).

Dr. Grimm has been criticized by Plaintiffs for using animal nerves and animal tissue properties in her studies, which they claim could introduce error into the results. She explains that animal nerves are the "gold standard" for these types of studies because human nerves deteriorate rapidly after death and data obtained from human cadavers are therefore inaccurate. For ethical reasons, it is not possible to test the biomechanics of nerves in living humans. Hearing Tr. 89, ECF No. 86 (Apr. 25, 2018).

Plaintiffs also criticize Dr. Grimm for not having published papers about injuries that are exactly like B.M.'s particular injuries (i.e., rupture of the C5 and C6 nerves,

partial rupture of the C7 nerve, and some injury to the C8 and T1 nerves), or conducting a model of B.M.'s specific delivery. Hearing Tr. 150-51, ECF No. 86 (Apr. 25, 2018). The Court understands that a computer model of B.M.'s specific delivery is impossible and does not agree that this criticism undermines her opinion in this case.

Dr. Grimm's testimony has been deemed reliable under the Daubert standard by other courts.¹³ See, e.g., Silong v. United States, No. CVF06-0474 LJODLB, 2007 WL 2535126, at *3 (E.D. Cal. Aug. 31, 2007) ("The evidence provided by the Government shows that Dr. Grimm's expert opinion is reliable for purposes of Rule 702 and Daubert."); Bayer ex rel. Petrucelli v. Dobbins, 2016 WI App 65, ¶¶ 1, 25 (reversing trial court that excluded Dr. Grimm's testimony).

The Silong court based its decision on Dr. Grimm's peer-reviewed articles, references to Dr. Grimm's work in obstetric textbooks and the 2014 publication by the American College of Obstetrics and Gynecology, her status as a course instructor on this subject, her receipt of multiple awards for research

¹³ Other courts have disallowed Dr. Grimm's testimony under the Frye-Parker standard which does not apply here. These courts had concerns about the applicability of her model to the specific case at hand, as well as whether "animal models" could apply to humans. See Nobre ex rel. Ferraro v. Shanahan, 2013 N.Y. Slip Op. 23433, *13 (N.Y. Sup. Ct. 2013), Sutryk v. Osula, Index No. 91904 (N.Y. Sup. Ct. 2013). But see Ruffin ex rel. Sanders v. Boler, 890 N.E.2d 1174 (2008) (allowing Grimm's testimony under a Frye standard).

excellence on this issue, her presentation of findings at multiple conferences, and the support of her theory in other literature. Silong, 2007 WL 2535126, at *3. The Bayer appellate court was impressed with Dr. Grimm's academic record and publications and found that the lower court erroneously ignored Dr. Grimm's explanation that animal studies were necessary under the circumstances because it would be impossible to conduct studies using live human children. Bayer ex rel. Petrucelli, 2016 WI App 65, ¶¶ 25, 29-30. The Court also finds these decisions persuasive for the reasons stated above.

Accordingly, the Court shall deny Plaintiffs' request to exclude Dr. Grimm's testimony in this case.

B. ROBERT ALLEN, PH.D

Dr. Allen is a biomedical engineer¹⁴ with a research focus in obstetrics. He has been publishing in the area of brachial plexus injuries and shoulder dystocia since 1988.

Dr. Allen will not offer an opinion about the standard of care. Hearing Tr. 177, ECF No. 86 (Apr. 25, 2018). His opinion is that it would be speculative for anyone to conclude that maternal forces of labor alone could cause B.M.'s injury.

¹⁴ Dr. Allen has an engineering science degree from the State University of New York at Stony Brook, a M.A. in engineering from the University of California at Berkeley, and a Ph.D in civil engineering from Carnegie-Mellon University.

Hearing Tr. 171, ECF No. 86 (Apr. 25, 2018). He opines that no amount of physician-applied axial or downward traction could have caused this injury. Hearing Tr. 192, ECF No. 86 (Apr. 25, 2018). And because there were no other abnormalities observed in the labor and delivery process, he concludes that the only remaining explanation is that Dr. Welch applied lateral traction or bending of B.M.'s neck (even though Dr. Welch's notes stated that he applied axial traction). Hearing Tr. 178, ECF No. 183 (Apr. 25, 2018). He also opines that even if the injury was to the baby's posterior arm, it would have been caused by "upward traction" by the physician, not the maternal forces of labor. Hearing Tr. 184, ECF No. 86 (Apr. 25, 2018). Dr. Allen also adjusted his opinion to B.M.'s particular injury, explaining that injury to C8 and T1 nerves are more consistent with lateral traction or bending of the baby's neck. Hearing Tr. 178, ECF No. 86 (Apr. 25, 2018).

His opinions appear to derive in part from several studies that he performed when publishing literature in the field. In one study, he used fingertip sensors placed on the gloves physicians wore during delivery, in order to measure the amount of contact force between the physician's hand and the baby's head. Hearing Tr. 184, ECF No. 86 (Apr. 25, 2018). This study supported the finding that physicians often apply far more force in a shoulder dystocia delivery than during a normal delivery.

Hearing Tr. 185, ECF No. 86 (Apr. 25, 2018). In another study, he used a physical simulator model to simulate delivery. He used a "pelvis encased in soft tissue replicas" with "legs that can rotate" at the hip joint and a "pelvis that also rotates." Hearing Tr. 187, ECF No. 86 (Apr. 25, 2018). He states that the resistance of delivery in the model has been determined "quantitatively by obstetricians to be realistic." Hearing Tr. 178, ECF No. 187 (Apr. 25, 2018). It is not entirely clear how this physical model relates to B.M.'s case.

Dr. Grimm criticizes Dr. Allen's studies as being not scientifically reliable because they are based upon inaccurate or unrealistic parameters and assumptions. Hearing Tr. 114, ECF No. 86 (Apr. 25, 2018). She criticizes his glove sensor study for having data limitations (e.g., by not sufficiently distinguishing between pulling and squeezing forces and by simplifying the data by choosing an arbitrary midpoint to be a routine or normal amount of force). Hearing Tr. 118-19, ECF No. 86 (Apr. 25, 2018). Moreover, according to Dr. Grimm, his physical model was flawed because it has significant limitations for modeling a live birth. Hearing Tr. 116-17, ECF No. 86 (Apr. 25, 2018). In fact, the mannequin "baby" in the physical model could not even be physically "delivered." Defendants also criticize Dr. Allen's studies as based on

extremely small sample sizes and criticize his opinions as based upon outdated literature dating back to the early 1900s.

The Court finds that Dr. Allen's physical models and glove sensor studies, while imperfect, do show that his theory regarding physician-applied forces has been tested and that his methodology follows a set of standards. He has published a significant number of articles in this area and relies on enough articles to support his theory about the impact of lateral traction on brachial plexus injury. His high number of publications on the subject suggests that his studies have achieved a level of acceptance in the relevant scientific community.

Moreover, at least one court has spoken highly of Dr. Allen's work, although it was in the context of explaining why Dr. Grimm's testimony should not be allowed under the New York Frye-Parker standard. See Nobre ex rel. Ferraro v. Shanahan, 42 Misc. 3d 909, 914, 976 N.Y.S.2d 841, 846 (Sup. Ct. 2013) ("For more than 25 years, Dr. Allen has performed collaborative research with obstetricians specializing in high-risk births of shoulder dystocia and related mechanical injuries. He has written a great deal on the subject of shoulder dystocia and brachial plexus injuries, with many of his articles being subject to peer-review.").

There could be concerns about the possibility that some of the literature upon which he relies is outdated. However, this would be properly raised on cross-examination. For the reasons stated above, the Court finds that Dr. Allen's opinion in this case is reliable enough to survive judicial scrutiny under Daubert, and will deny Defendants' request to exclude his testimony.

C. OTHER CAUSATION EXPERTS

The Court understands that the remaining causation experts in this case (Drs. Silver, Greene, Duboe, and Kozin), would be called to either provide obstetric-specific opinions about this case - such as the precise nature of B.M.'s injury and his subsequent disabilities - or to opine on causation in a way that is consistent with the opinion of the two main causation experts, Drs. Grimm and Allen.¹⁵

Because the Court will allow the testimony of the two main causation experts from both sides, it does not now find a basis to exclude the supporting opinions for either side. Neither side has presented sufficient evidence or argument to persuade the Court that these experts' opinions are unreliable under the Daubert standard.

¹⁵ Indeed, one of Defendants' contentions is that the Kozin and Duboe opinions suffer from the same flaws as does Dr. Allen's opinion. Defs.' Reply at 7, ECF No. 75.

For example, issues raised by the Plaintiff regarding Drs. Silver and Greene mostly relate to whether they based their opinions on the facts of this specific case or whether their opinions conflict with other Defendant experts. These are issues that would be properly raised on cross-examination.

Issues raised by the Defendants regarding Drs. Kozin and Duboe are almost directly linked to the same problems they raised with Dr. Allen's opinions. See Defs.' Mot. at 2 n. 1, ECF No. 65. Under the circumstances, the Court finds that Dr. Kozin's and Dr. Duboe's proposed supporting opinions could also reliably aid the jury in this case. Dr. Kozin is B.M.'s treating orthopedic surgeon and has personal knowledge of the specific injuries,¹⁶ and Dr. Duboe is well qualified as an obstetrician, with over 32 years of clinical practice, 7000 deliveries, and at least 70 shoulder dystocia cases.¹⁷ Pls.' Opp. at 2, ECF No. 71.

Accordingly, the Court will not exclude the expert opinions of Drs. Silver, Greene, Duboe, and Kozin.

¹⁶ Indeed, Dr. Kozin's expert report does not indicate that he will offer a causation opinion at all. Rather, it appears that his opinion will focus on the severity of B.M.'s injuries and the future prognosis of his disability. Report of Scott H. Kozin, M.D., dated April 22, 2016.

¹⁷ Dr. Duboe's testimony appears to focus on the standard of care for a treating obstetrics physician. Report of Dr. Fred Duboe, dated April 20, 2016.

V. ECONOMIC EXPERTS

Defendants wish to exclude the expert opinions of Dr. Patricia Pacey, Ph.D, and Dr. Tanya Rutherford Owen, Ph.D, regarding B.M.'s future lost income and lost earning capacity, respectively.

Dr. Pacey is an economist¹⁸ and has testified in other courts on economic issues. In this case, she used earnings data in the Current Population Survey ("CPS"), prepared by the Census Bureau, as well other data and published literature to calculate future lost income. Her methodology involved comparing able-bodied college-educated males with their "moderately disabled" counterparts. See Pacey Aff. ¶ 19, ECF No. 70-6. She intends to opine that B.M. will sustain a 16.9% loss of earnings over his lifetime due to his disability, id. ¶ 28, and a \$454,600 loss of future wages. Updated Pacey Report at 3, ECF No. 70-11. She considered other data surveys in her calculation and determined they come to similar results.

Dr. Owen is a rehabilitation counselor¹⁹ and specializes in vocational rehabilitation and life care planning. She prepared a Vocational Worksheet explaining the factors she used to find

¹⁸ Dr. Pacey has a B.A. and Ph.D in economics from the University of Florida.

¹⁹ Dr. Owen has a B.A. from Millsaps College in Philosophy, a M.A in Counseling Psychology from the University of Southern Mississippi, and a Ph.D in Rehabilitation from the University of Arkansas.

that B.M. would sustain some loss of earnings capacity. See Pls.' Opp Ex. 7, ECF No. 70-8. The four factors include a loss of access or loss of opportunity, loss of competitiveness, decreased time in the labor market, and difference in wages for jobs. Id. Dr. Owen relied on the same set of CPS data that Dr. Pacey used. Hearing Tr. 50, ECF No. 86 (Apr. 25, 2018).

At the Daubert hearing, Defendants called Dr. John Scarbrough, Ph.D, a labor economist, to present testimony regarding the alleged unreliability of the Plaintiffs' economic experts.²⁰ He testified to his opinion that Dr. Pacey's proposed testimony is unreliable because it does not take into account a number of important factors specific to B.M. (including age of onset of disability) and therefore does not follow the standard method for assessing lifetime earnings. Hearing Tr. 24, ECF No. 86 (Apr. 25, 2018). Other criticisms included: that the data Dr. Pacey relied upon was based upon surveys of disabled individuals over the age of 15 and excluded those whose disability began at birth (id. at 27), that Dr. Pacey treated the Census Bureau cross-sectional data as though it were longitudinal data (id. at 27), that the Census Bureau data is self-reported (id. at 29), that the charts Dr. Pacey uses in her

²⁰ Dr. Scarbrough will not testify at trial. He has a Ph.D in economics and has a research interest on the impact of disabilities on children and their occupational decisions. Hearing Tr. 16, ECF No. 86 (Apr. 25, 2018).

report depict only summary data and not underlying data (id. at 30); that her analysis of the data does not exclude outliers (id. at 34), and that the unreliability of the Census Bureau data has been recognized (id. at 38-40). Regarding Dr. Owen's testimony, Dr. Scarbrough testified that the four "factors" she relies upon in her expert report are not necessarily relevant in this case. Hearing Tr. 48-50, ECF No. 86 (Apr. 25, 2018).

It appears clear any possible economic evaluation methodology would reasonably find that a mobility disability, such as the one that B.M. has, will cause some future income loss. The question is how that future income loss can be reliably measured. The Court is troubled by the specificity of Dr. Pacey's opinion that B.M. would suffer a "16.9%" loss of income over his lifetime because Dr. Pacey's methodology does not appear to be based on any equally specific analysis. Dr. Pacey used Census Bureau data (and other sets of similar data) to compare the lifetime income of (1) a healthy, able-bodied male with a college degree with (2) a "moderately disabled" male with a college degree. Because disabilities come in all types, this broad comparison of "healthy" to "moderately disabled" is unreliable and speculative. As an example, Dr. Pacey does not account for differences between mobility disabilities and cognitive disabilities, or between mobility disabilities and other physical disabilities such as eye or hearing disabilities.

The nature of those disabilities would naturally change the nature of any occupation that those individuals choose. Dr. Pacey also does not adjust the data for any other factors (beyond assuming that B.M. will get a bachelor's degree), including, for example, the degree of disability, the age of disability onset, or the nature of the relevant occupation.

Naturally, it is difficult to select a future occupation for an infant. However, the Court finds that the lack of any attempt at all to consider possible occupational groups, including occupational groups that would be inaccessible to B.M. because of his mobility disability, renders Dr. Pacey's specific opinion to be unreliable. To be clear, the Court does not expect any economic expert to arbitrarily assign an occupation to B.M. at this stage, but finds that a proper economic analysis would at least attempt to account for occupations that B.M. likely could not choose (including occupations involving manual labor using both arms and hands). For the same reason, the Court is not convinced by Plaintiff's argument that a broad brush or categorical approach to this case is somehow more reliable because any opinion based upon these categories would also be based upon large databases of data of individuals in a variety of occupations.

Dr. Pacey has testified in other cases,²¹ but it is unclear how similar her testimony in those cases is to the opinions in this case. Moreover, the Court finds more persuasive the reasoning of courts who have disallowed this type of broad testimony that does not account for an individual's specific disability. See, e.g., Kempf Contracting & Design, Inc. v. Holland-Tucker, 892 N.E.2d 672, 677-78 (Ind. Ct. App. 2008) ("Tierney . . . used databases compiled by the government to determine the earning capacity of people with a physical disability who have attained a bachelor's degree. . . . The databases Tierney used in reaching his opinion were also not specifically geared to Tucker's specific disability, but only to persons with a general physical disability"); Phillips v. Indus. Mach., 257 Neb. 256, 262 (1999) ("The [trial] court noted that the definition of 'disabled' as used in the New Work Life Expectancy Tables made no differentiation between people with minor disabilities and those with serious disabilities or between people with disabilities which affect their work and those with disabilities which have no effect on their work. The court explained that under these broad statistics, Marchisio 'could present virtually the same opinion testimony he presented

²¹ See, e.g., Contreras v. Schirmer, 2010 WL 4167326 (Colo. Dist. Ct. 2010) (finding Pacey's expert opinion sufficient to assist the jury).

in this case in any courtroom, with any injured plaintiff, without modifying the opinion at all.' . . . We agree.").

The Court finds that it will be useful for the jury to have some economic data upon which to make their damages calculation, including data about what a healthy college-educated male is expected to make over the course of his lifetime. The parties agree that this baseline figure is not controversial. However, the Court finds that it would be inappropriate to allow Dr. Pacey's specific disability-adjusted figure of 16.9% to enter into evidence²² because her methodology did not properly consider the type of injury that B.M. suffered, the degree of his injury, the occupations that B.M. could be excluded from, and the fact that he received the injury at birth instead of later in life.

For the reasons stated above, Dr. Pacey is permitted to testify about the expected future income of a healthy college-educated male over his lifetime. However, any economic opinions from Dr. Pacey regarding B.M.'s specific situation that does not also include a proper consideration of the type of injury that B.M. suffered, the degree of his injury, the occupations that B.M. could be excluded from, and the fact that he received the injury at birth instead of later in life, shall be excluded.

²² Or her determination that he would suffer future lost wages in the amount of \$454,600, or any other specific disability-adjusted figure.

Dr. Owen does not purport to come to a specific number for B.M.'s loss of earning capacity, but opines that he will suffer some degree of loss in earning capacity on the basis of several factors: a loss of access or loss of opportunity, loss of competitiveness, decreased time in the labor market, and difference in wages for jobs. Pls.' Opp. Ex. 7 at 5, ECF No. 70-8. The Court does not find that Dr. Owen's testimony suffers from reliability concerns, and shall not exclude her testimony.

VI. REQUEST FOR ATTORNEYS' FEES

Plaintiffs have requested attorneys' fees for defending what they consider to be a frivolous motion to exclude their economic experts. Pls.' Opp. at 23, ECF No. 70. The Court does not find that the motion was frivolous or filed in bad faith, and will deny the request for attorneys' fees.

VII. CONCLUSION

Accordingly:

1. Plaintiffs' Motion To Exclude The Defendants' Expert Causation Opinions [ECF No. 62] is DENIED.
2. Defendants' Motion To Exclude Expert Testimony On Lost Future Income And Request For Hearing [ECF No. 63] is GRANTED IN PART and DENIED IN PART.
 - a. Dr. Pacey's testimony shall be limited at trial in accordance with the findings of this Memorandum and Order.
 - b. Dr. Owen's testimony shall not be excluded at trial.
3. Defendants' Motion To Preclude Opinion Testimony of Robert Allen, Ph.D. And Request For Hearing [ECF No. 65] is DENIED.
4. Defendants' Motion and Supplemental Memorandum Supplying Testimony And Supporting Exclusion Of Causation Opinions Of Fred Duboe, M.D. and Scott Kozin, M.D. [ECF No. 67] is DENIED.
5. Plaintiffs' request for attorneys' fees [ECF No. 70] is DENIED.

SO ORDERED, this Friday, May 4, 2018.

/s/ _____
Marvin J. Garbis
United States District Judge